

AMENDMENTS TO THE CLAIMS

1 - 18. (Canceled)

19. (Currently Amended) A method for fabricating a semiconductor circuit substrate for use in a radiation detection device, said semiconductor circuit substrate comprising cell circuitry, the method comprising the steps of:

(a) forming one or more via holes through the semiconductor circuit substrate so as to form one or more signal pathways, each signal pathway having a first end and a second end;

(b) depositing a conductive shielding over internal walls of said one or more via holes;

(c) depositing an insulating layer over said conductive shielding;

[[(b)]](d) depositing conductive material in said one or more signal pathways to provide one or more conductive signal pathways therein;

[[(c)]](e) connecting at least one of control signal, readout and power supply lines to the first end of said signal pathways; and

[[(d)]](f) connecting cell circuitry to the second end of said signal pathways.

20. (Original) A method according to claim 19, including reducing the thickness of said semiconductor circuit substrate in a region of the substrate, and forming said via holes through the region.

21. (Original) A method according to claim 20, comprising fabricating said cell circuitry in said semiconductor circuit substrate prior to reducing the thickness of said semiconductor circuit substrate.

22. (Canceled)

23. (Previously Presented) A method according to claim 19, wherein step (a) comprises:

depositing photo-resistive material over said semiconductor circuit substrate;
applying a photo-lithographic mask having one or more openings;
exposing said photo-resistive material through said openings in said mask;
removing said exposed photo-resistive material to expose said circuit substrate; and
etching said exposed semiconductor circuit substrate so as to form said one or more via holes.

24. (Currently Amended) A method according to claim 19, wherein step ~~[(b)]~~(d) comprises inserting conductive material into said one or more via holes.

25. (Original) A method of fabricating a radiation detector device, comprising:
fabricating a semiconductor circuit substrate according to claim 19;
forming a plurality of conductive contacts on a surface of said semiconductor circuit substrate, each conductive contact being arranged to receive charge from a detector cell formed in a detector substrate separate from said semiconductor circuit substrate;
connecting said plurality of conductive contacts with cell circuitry; and
connecting the detector substrate to said semiconductor circuit substrate by means of the conductive contacts.

26. (Currently Amended) A method for fabricating a semiconductor imaging device for imaging radiation, said semiconductor imaging device comprising a semiconductor circuit substrate comprising cell circuitry, the method comprising the steps of:

etching an array of via holes through the semiconductor circuit substrate at locations associated with an array of detector cell circuit locations;

depositing a conductive shielding over internal walls of said one or more via holes;

depositing an insulating layer over said conductive shielding;

placing a detector substrate having an array of detector cell contacts corresponding to said array of cell circuit locations in proximal relationship to the etched semiconductor circuit substrate such that detector contacts are in correspondence with said via holes; and

depositing a conductive material in said via holes to provide signal pathways between said cell circuit locations and said detector cell contacts.

27. (Original) A method according to claim 26, comprising
selectively applying an adhesive material to one or both of said detector substrate and said semiconductor circuit substrate; and
coupling said detector substrate to said semiconductor circuit substrate by means of said adhesive material.

28. (Original) A method according to claim 27, in which the layer of adhesive material is selectively applied to as to leave said detector contacts substantially uncovered by said adhesive.

29. (Original) A method according to claim 28, wherein said adhesive material comprises photo-resistive material